PATENT
Attorney Docket No. 2000/US/1
USPTO Facsimile No. (703) 872-9306

Claims:

1. (Previously Presented) A method for the production of a polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings, the method comprising: a first electrolysis wherein an electric current is passed between two or more electrodes immersed in an electrolytic mixture comprising an ester, an electrolyte and an aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings; harvesting the resultant polymer from the first electrolysis; and a second electrolysis wherein an electric current is passed between two or more electrodes immersed in an electrolytic mixture comprising an ester, an electrolyte and one or more of the electrodes including the harvested polymer from the first electrolysis.

2. (Previously Presented) The method of claim 1 wherein the resultant polymer from the first electrolysis is deposited on at least one of the two or more electrodes from the first electrolysis, and the at least one of the two or more electrodes is then used as one of the electrodes in the second electrolysis.

3. (Currently Amended) The method of claim 1 wherein the electrolyte in the electrolytic mixture of the first or second electrolysis is selected from the group consisting of $LiPF_6$, $NaPF_6$, KPF_6, $LiBF_4$, KBF_4, $(CH_3)_44NPF_6$, ~~$(C_2H_5)_4NPF$~~ $(C_2H_5)_4NPF_6$, $(C_2H_5)_4NBF_4$, and mixtures thereof.

4. (Original) The method of claim 1 wherein the electrolytic mixture of the first electrolysis further comprises a solvent.

5. (Previously Presented) The method of claim 4 wherein the solvent is selected from the group consisting of acetonitrile, propionitrile, benzonitrile, nitromethane, nitroethane, nitrobenzene, tetrahydrofuran, diethyl ether, dimethoxyethane, dioxane, dichloromethane, dichloroethane, benzene, toluene, chlorobenzene, fluorobenzene, and mixtures thereof.

6. (Original) The method of claim 1 wherein the electrolytic mixture of the second electrolysis further comprises a solvent.

7. (Previously Presented) The method of claim 6 wherein the solvent is selected from the group consisting of acetonitrile, propionitrile, benzonitrile, nitromethane, nitroethane, nitrobenzene, tetrahydrofuran, diethyl ether, dimethoxyethane, dioxane, dichloromethane, dichloroethane, benzene, toluene, chlorobenzene, fluorobenzene, and mixtures thereof.

8. (Original) The method of claim 1 wherein the ester of the first or second electrolysis is selected from the group consisting of a simple ester, a carbonic ester, a lactone, a complex ester, and mixtures thereof.

9. (Original) The method of claim 8 wherein the ester is a simple ester selected from the group consisting of methyl formate, ethyl formate, methyl acetate, ethyl acetate, methyl propionate, ethyl propionate, methyl butylate, and mixtures thereof.

10. (Previously Presented) The method of claim 8 wherein the ester is a lactone selected from the group consisting of β-propiolactone, γ-butyrolactone, δ-valerolactone, ϵ-caprolactone, and mixtures thereof.

11. (Previously Presented) The method of claim 8 wherein the ester is a carbonic ester selected from the group consisting of ethylene carbonate, propylene carbonate, butylene carbonate, dimethyl carbonate, diethyl carbonate, ethyl methyl carbonate, and mixtures thereof.

12. (Original) The method of claim 1 wherein the ester of the first electrolysis is at least 20% by volume of the electrolytic mixture.

13. (Original) The method of claim 1 wherein the ester of the second electrolysis is at least 20% by volume of the electrolytic mixture.

14. (Previously Presented) The method of claim 1 wherein the first electrolysis further comprises a reference electrode for voltage control.

15. (Original) The method of claim 1 wherein the second electrolysis further comprises a reference electrode for voltage control.

16. (Previously Presented) The method of claim 1 wherein at least one of the electrodes in the first or second electrolysis is platinum, nickel, stainless steel, copper, carbon, PbO_2, titanium coated with platinum or titanium coated with PbO_2.

17. (Original) The method of claim 1 wherein the electrolyte of the first electrolysis is at a concentration of from 0.001 to 1 mol/L.

18. (Original) The method of claim 1 wherein the electrolyte of the second electrolysis is at a concentration of from 0.001 to 1 mol/L.

19. (Original) The method of claim 1 wherein the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings of the first electrolysis is at a concentration of from 0.01 to 10 mol/L.

20. (Original) The method of claim 1 wherein the polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings is poly(9-fluorenone) and the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is fluorene.

21. (Previously Presented) The method of claim 1 wherein the polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings is polycyclopenta[*def*]phenanthren-4-one) and the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is 4H-cyclopenta[*def*]phenanthrene.

22. (Previously Presented) The method of claim 1 wherein the polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings is poly(8H-cyclopenta[*def*]fluoren-4-one) and the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is 4,8-dihydrocyclopenta[*def*]fluorene.

23. (Previously Presented) The method of claim 1 wherein the polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings is poly(cyclopenta[*def*]fluoren-4,8-dione) and the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is 4,8-dihydrocyclopenta[*def*]fluorene.

24. (Previously Presented) The method of claim 1 wherein the polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings is poly(benzo[*b*]fluoren-11-one) and the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is 11*H*-benzo[*b*]fluorene.

25. (Previously Presented) The method of claim 1 wherein the polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings is poly(dibenzo[*b,h*]fluorene-12-one) and the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is 12*H*-benzo[*b,h*]fluorene.

26. (Previously Presented) The method of claim 1 wherein the polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings is poly(indeno[1,2-*b*]fluorene-6,12-dione) and the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is 6,12-dihydro-indeno[1,2-*b*]fluorene.

27. (Canceled) The polymer produced according to claim 1.

28. (Canceled) The polymer of claim 27 wherein at least 30% by weight of the polymer are units that contain at least one cyclopentanone structure condensed with at least two aromatic rings.

29. (Canceled) The polymer of claim 27 wherein at least 50% by weight of the polymer are units that contain at least one cyclopentanone structure condensed with at least two aromatic rings.

30. (Canceled) The polymer of claim 27 wherein at least 70% by weight of the polymer are units that contain at least one cyclopentanone structure condensed with at least two aromatic

rings.

31. (Canceled) A light-emitting diode comprising the polymer produced according to claim 1.

32. (Canceled) The light-emitting diode of claim 31 wherein the light-emitting diode is a multilayer light-emitting diode.